

REMARKS

Applicants respectfully request reconsideration of the present application, as amended, and consideration of the following remarks.

Claims 1 – 26, and 28 are currently pending and have been rejected by the Examiner.

In accompanying amendment claims 1, 22 and 25 have been amended and claim 26 has been canceled. Further new claims 29 – 31 have been added.

Support for the amendments can be found in specification, claims, and drawings as originally filed. In view of the above-listed support for the amendment, it is respectfully submitted that the amendments do not add new matter.

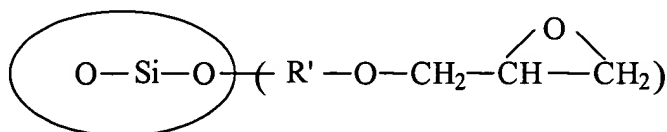
Claim Rejections Under 35 U.S.C. § 103

The Examiner has rejected claims 1, 9 – 12, 13 – 17, 19 – 26, and 28 under 35 U.S.C. § 103(a), as being unpatentable over Wong et al. (U.S. patent No. 6,180,696) in view of Keehan (U.S. patent No. 5,026,816).

The applicants, however, respectfully disagree with the Examiner in this regard.

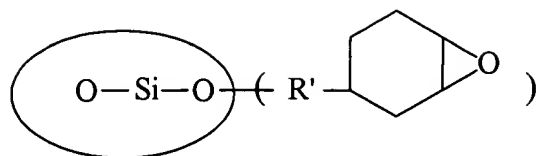
Claim 1 as amended includes the following limitations:

1. A no-flow underfill material comprising:
an epoxy-based resin;
oxirane grafted silica particles; represented by



or

(1)



(2);

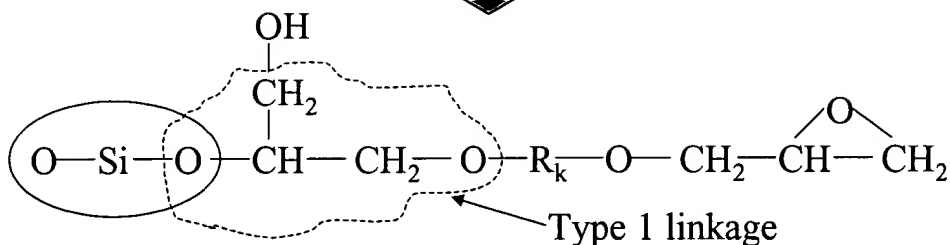
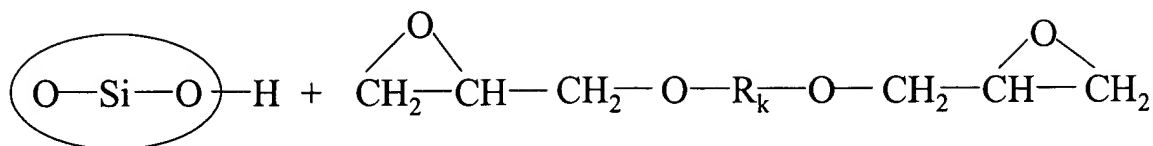
wherein R' is an organic linkage between a surface of a silica particle and a diglycidyle ether type oxirane group and not a reaction product of a reaction between an oxirane group and an hydroxyl group.;

at least one agent acting as a cross-linking hardener and a curing catalyst capable of catalyzing the curing of the epoxy-based resin; and
a fluxing agent.

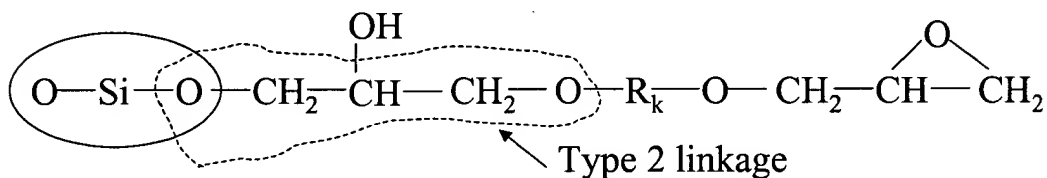
Keehan teaches a pre-polymer which is prepared by chemically bonding an inorganic oxide having a hydrolyzable oxygen, such as aluminum oxide, silica, magnesium oxide, or the like with a difunctional oxirane oligomer, such as the diglycidyl ether of resorcinol (DGER) or the diglycidyl ether of bisphenol A (DGEBA); causing only partial reaction of the oligomer with hydroxyl groups of the inorganic oxide, to form an organic-inorganic backbone, with the inorganic oxide grafted to the aromatic oxirane oligomer. These prepolymers can be further reacted and polymerized with tertiary, secondary or primary amines, anhydrides, Lewis acids, Lewis bases, amides, ureas, melamines, triazines and other commonly used hardeners and catalysts.”

(See Column 3, Keehan Patent No. 5,026,816)

In accordance with the teaching of Keehan, the organic linkage between the silica particles to other parts of the oxirane moiety is the reaction product between a oxirane group and hydroxyl group. There are only two kinds of linkages that are possible for any of Keehan’s pre-polymers. These linkages are shown in the drawings as a Type 1 linkage and a Type 2 linkage.



or



Claim 1, as amended, explicitly recites that R' is not a reaction product of a reaction between an oxirane group and a hydroxyl group.

In view of the foregoing, it is respectfully submitted that the combination of Wong and Keehan fails to teach or suggest all limitations of claim 1. Therefore, it is respectfully submitted that claim 1 cannot be anticipated or rendered obvious by the combination of Wong and Keehan.

Given that claims 2 – 21 depend on claim 1, it is respectfully submitted that these claims are also not anticipated or rendered obvious by the combination of Wong and Keehan.

The Examiner has also rejected claims 2 – 8 under 35 USC § 103(a) as being unpatenable over Wong and Keehan in view of Japanese Patent No. 6,1,112,086 to Inokuchi. As noted above, the combination of Wong and Keehan fails to recite that the linkage R' is not a reaction product between an oxirane group and a hydroxyl group, as recited in claim 1. Thus, the combination of Wong, Keehan and Inokuchi fails to teach or suggest all limitation of claims 2 –8. Accordingly, it is respectfully submitted that claims 2 –8 cannot be anticipated or rendered obvious by the combination of Wong, Keehan and Inokuchi.

Claims 22 – 25 have similar limitations to the limitations of claim 1, and for the reasons stated above it is respectfully submitted that these claims are also not anticipated or rendered obvious by the combination of Wong and Keehan.

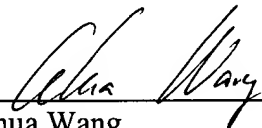
It is respectfully submitted that by virtue of the above, all claim rejections have been overcome and that the claims are in condition for allowance, which actively is earnestly solicited.

Please charge any shortages and credit any overages to Deposit Account No. 02-2666. Any necessary extension of time for response not already requested is hereby requested. Please charge any corresponding fee to Deposit Account No. 02-2666.

Respectfully submitted,

BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP

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Lehua Wang
Reg. No. 48,023

12400 Wilshire Boulevard
Seventh Floor
Los Angeles, California 90025-1026
(408) 720-8300